during the progress of the work, as well as at its conclusion.

In order to insure the equal advance of all the parts together, particular attention must be paid to the colouring matter, as well to the quantity employed, as to its equal distribution. If too small a quantity be used in the first instance, it will afford little or no evidence of the general condition of the surface, as it will merely serve to indicate the particular points which happen to be most prominent, and to reduce them in detail, would be only a waste of time, so long as they are considerably above the general level.

When the surface is finished, if it be rubbed on the plate without colour, the bearing points will become bright, and the observer will be enabled to judge of the degree of accuracy to which it has been brought. If it be as nearly true as it can be made by the hand, bright points will be seen diffused throughout its whole extent, interspersed with others less luminous, indicating thereby the degree of force with which they respectively bear.

In getting up a surface of considerable extent, it is necessary to take into account the strain to which the metal is subject from its own weight, and the length of time required to produce the full effect on the external form. It will be found, for example, that after a piece of metal has remained for some days in one position undisturbed, it assumes a form different from that which it had while undergoing preparation. Hence it is desirable to provide for the work, while in hand, similiar support to that which it will have when applied to its intended use.

Another disturbing cause is the unequal contraction of the metal in cooling when originally cast. The mass assumes a curved form, and is pervaded by elastic forces counteracting each other. These continue in permanent activity, and any portion of metal, taken from any part, tends to disturb the balance previously established. It remains now to consider the second case proposed—viz. how to prepare an original surface. A brief description of the proper mode will still further illustrate the case already considered, and will also shew how surface-plates are to be corrected.

Take three plates of cast-iron, of equal size and proportionate strength. The metal should be of a hard quality, and the plates should also be well ribbed on the back to prevent springing, and each of them should have three projecting points on which to rest, placed triangularly in the most favourable positions for bearing. The object of this provision is two-fold—1st. To secure the bearing of three good points, before the plate suffers any strain from its own weight; and, 2nd. To insure the constant bearing of the same points. The plate would otherwise be subject to perpetual variation of form, owing to the irregular strain occasioned by change of bearing. A provision of this kind is equally necessary, while the plate is undergoing the operation of surfacing, and when it is subsequently used as a model.

In fixing the plates on the table of the planing-machine, care should be taken to let them bear upon the points before mentioned, and to chuck them with as little violence as possible to the natural form, otherwise they will spring on being released, and the labour of filing will be increased in proportion. It is proper also to relax the chucks before taking the last cut. With these precautions, if the machine itself be accurate, and the tool in proper condition, the operation of planing will greatly facilitate the subsequent processes.

The plates are next to be tried by the straight edge, by a skilful use of which, a very small degree of inaccuracy may be detected.

Let one of the three plates be now selected as the model, and the others be surfaced to it with the aid of colouring matter. For the sake of distinction, they may be called Nos. 1, 2, and 3. When Nos. 2 and 3 have been brought up to No. 1, compare them together. It is evident, that if No. 1 be in any degree out of truth, Nos. 2 and 3 will be either both concave or both convex, and the error will become sensible on comparing them together by the intervention of colour. To bring them to a true plane, equal quantities must be taken from both in corresponding places. When this has been done with all the care and skill the mechanic may possess, and Nos. 2 and 3 are found to agree, the next step is to get up No. 1 to both, applying it to them in immediate succession, so as to compare the impressions. The art here consists in getting No. 1 between the two, which is the probable direction of the true plane. It is to be presumed that No. 1 is now nearer truth than either of the others, and it is, therefore, to be again taken as the model, and the operation repeated.

It will be observed that the process now described includes three parts, and consists in getting up the surfaces to one another in the following order:—

1st. Nos. 2 and 3, to No. 1.
2nd. Nos. 2 and 3, to each other.
3rd. No. 1 to Nos. 2 and 3.

These parts compose an entire series, by repeating which a gradual approach is made towards absolute truth, till further progress is prevented by inherent imperfection.

In the earlier stages the operation may be greatly expedited by judicious management. It has been already remarked, but it cannot be too often repeated, that the general outline of the surface should be solely regarded in the first instance, and the filing up deferred till after general truth has been secured. By this method, the first courses of the series will be short, and the progress made will be both more speedy and more sure, the minuter detail being gradually entered upon, without the risk otherwise incurred, of losing previous labour. As, however, the surfaces approach perfection, the utmost caution and vigilance will be necessary to prevent them from degenerating; and this will inevitably happen, unless the comparison be constantly made between them all.

In the use of the surface-plate, especial care should be taken to prevent unnecessary injury, whether superficial or from straining. It should also be occasionally submitted to careful correction. In no other way can a high standard be steadily maintained.

It will be found convenient to set apart one plate for the purpose of correcting others, allowing it to remain entirely undisturbed; otherwise it would be necessary, at every revision, to repeat the process for obtaining an original surface, and a considerable loss of time would thus be occasioned.

A mistaken idea seems to prevail amongst mechanics, that scraping is a dilatory process, and this prejudice may tend to discourage its introduction. It will be found, however, to involve the sacrifice of less time than is now wasted on grinding; but were the fact otherwise, it would not be a valid argument against the preference due to the former. Nevertheless it is worthy of observation that, in this instance, as in many others, improvement is combined with economy, since there is not only an incalculable saving effected by the improved surface in its various applications, but there is likewise a positive gain of time in the preparatory process.—*Penny Mechanic.*

CHURCHES UNDER REPAIR.

The repairs and restorations of the fine old church of St. Mary Magdalene, at Taunton, are in active progress. The noble columnar arch, hitherto obscured by the organ, at the western entrance of the church, has been redeemed from its obscurity, and now presents, in connection with the ornamental roof, a beautiful feature in the edifice. The organ will be replaced; but by a lateral arrangement of the pipes, the surrounding architecture will be but partially suppressed. Some stained-glass windows, by Mr. Ray, contribute to the embellishments.

The restoration of Portsmouth church is in progress. One of the four lofty Norman arches, the only one remaining, which formerly supported the square tower, has been uncovered. It will be a work of labour to restore the tracery and ribbing which adorned it, as at present nothing but the plain stone outlines remain, and all the ornamental parts were swept away in 1698. The monuments of the Duke of Buckingham and others at the eastern end have been removed, and a Norman arch, with deep set window, in excellent preservation, discovered. Through this window, during the troubles of the Reformation, the officiating priest was shot at by a Lollard. A large circular-headed recess is also apparent in the northern transept, but whether it contains a window, or was one of the ancient shrines, is as yet unknown. If the large Norman arch be restored to match the two smaller side ones, the incongruous Corinthian cornice above it must be removed, by which a much greater appearance of elevation will be obtained.

Extensive repairs are in progress in St. Mary's church, Reading. During the course of last week three very ancient sedilia, of the early English architecture, were discovered in ruins behind the wainscoting on the south side of the chancel; the fresco painting at the back of them, and the encaustic tiles, being still in excellent preservation.

In St. Paul's church, Bedminster, near Bristol, a new altar-piece has been erected in the perpendicular style, and in Painswick stone. The carving is exquisite; all the spandrils are foliated; the buttresses terminated with crocketed pinnacles, and two handsome canopies with finials. The whole is appropriately decorated with the Tudor rose, portcullis, &c. The decalogal plates, executed in London by the celebrated Mr. Willement, are made to resemble tables of brass, and the letters are beautifully designed in the ancient illuminated character. Mr. Henry Rumley, of Bristol, has superintended this work.

A very superb and magnificent font of Caen stone is just fixed in Exeter Cathedral. It has been wrought by Mr. Rowe, of St. Bidwell's, from a design drawn by Mr. Hayward, architect to the Diocesan Church Architectural Society. The basin, which is of the largest size, and capable of affording immersion to the infant neophyte, presents an exterior of very close and elaborate carving, enriched with a Latin inscription, engraved with singular neatness and precision. The pedestal is divided into eight niches, in which appropriate figures will be placed. This font is the gift of the Rev. Canon Bartholomew, and when completed, is expected to cost very little less than 1000*l.* Mr. Rowe is executing another font, to be placed in Broadclist Church, the exterior carved in quatre foils and roses.

The font of Harrow church, Middlesex, which for some forty years has been superseded and lain in a neighbouring garden, has been lately replaced. It is a fine Norman bowl, and being repolished has a handsome appearance. Ilone, in his "Table Book," has represented it in its scene of retirement.

A stained-glass window has just been completed in Beckington church, near Frome. It is composed of three lancet openings, in the centre of which is the subject of our Saviour bearing his cross, from the celebrated picture at Oxford. The side compartments, designed by Mr. Owen Carter, architect, of Winchester, are of rich ornamental work. The whole is the production of Mr. Lygo, of Winchester.

J. Hambrough, Esq., of Steephill Castle, Ventnor, who built and endowed the church at his own expense, has, with his usual munificence, determined to have new side galleries erected at his own cost, which galleries will contain about two hundred additional sittings, and the whole are to be entirely free and unappropriated, for the use of the poor of the district.

On the morning of Whit-Tuesday, the church of Titmarsh, in Northamptonshire, was re-opened by the Bishop of Peterborough, after having undergone the following among other repairs:—1. Throwing open the large western tower, thereby gaining one hundred and eighty seats for children, and throwing open to view a beautiful decorated window and arch. 2. Building a new vestry-room on the north side of the church. Paving and fitting up with free seats a chantry belonging to the Pickering family, and given up to the parish by J. Pickering Orde, Esq.—*Gentleman's Magazine.*

London Improvements.—Mr. Barry has completed the internal decorations of the Travellers' Club, which have been suggestive of much criticism. The arabesques are executed by Sang, a German, and some of them possess considerable merit. The erection of the new attic gives a very picturesque effect to the exterior, and to the group of clubs in which the Travellers' seemed, until this alteration, to be sunk. The new Conservative Club in St. James's-street is progressing again, and is likely to be a magnificent feature in that palatial neighbourhood. Paternoster-row is to be invaded by architectural magnificence, the Religious Tract Society having authorized the construction of a new establishment, which is now far advanced, and shews a great array of stone columns and pilasters, such as will become a temple of piety, which we presume it is to be.—*Globe.*

The Milton Tablet.—Our readers are aware that a tablet has been inserted in the external wall of Allhallows church, Bread-street, Cheapside, commemorating the birth of Milton in that parish. It is a pity that this practice is not more extensively carried out in London, as it is abroad. Thus, to mention a few instances: the birth-place of Pope might be commemorated in Lombard-street; Spenser in East Smithfield; Lord Bacon in the Strand; Sir Thomas More in Milk-street; De Foe in Fore-street; Gray in Cornhill; Byron in Dover-street. The expense of tablets is not much, and might be supplied by the corporation of London. We recommend this to Mr. Richard Lambert Jones, who has done so much to make London a city of palaces. The residence of eminent men in particular houses is also thus commemorated abroad, and sometimes by changing the name of the street. We have only two instances of this in London: Milton-street in Fore-street, and Johnson's-court in Fleet-street.—*Polytechnic Review.*—[Was not Lord Byron born in Holles-street, Cavendish-square?]

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